AMENDMENTS TO THE CLAIMS

1. (Currently amended) A plane carbon commutator comprising:

a plurality of metal segments fixed to a commutator body made of resin, said metal segments having engaging holes and cut-rising pieces forming tip ends projecting inwardly from peripheral edges of said engaging holes; and

~~engaging projections provided on~~ a carbon ~~which was~~ previously burnt at a high temperature, said carbon having engaging projections being engaged with said engaging holes provided in said metal segments and integrally formed as one unit, each engaging projection having an end and a peripheral side,

wherein the tip ends of said cut-rising pieces ~~functioning~~ extend inwardly from the peripheral edges of the holes to engage the peripheral sides of the engaging projections with pressure sufficient to form coarse faces on the peripheral sides as the projections are inserted into the holes, ~~to allow insertion of said engaging projections into said engaging holes, but operative to~~ and to prevent said engaging projections from being pulled out from said engaging holes, ~~are projected from peripheral edges of said engaging holes, said cut-rising pieces are brought into contact under pressure with peripheral faces of said engaging projections, and a time at which said engaging projections pass through said engaging holes provided in said segments equals a time at which the peripheral faces of the tip end side of said engaging projections become~~ so that it is unnecessary to form coarse faces on the peripheral sides of said engaging projections ~~by said cut-rising pieces provided on said peripheral edges of~~ before inserting the projections into said engaging holes.

2. (Cancelled)

3. (Original) A plane carbon commutator according to Claim 1, wherein conductive paste is interposed between said segments and said carbon.

4. (Withdrawn)

5. (Currently amended) A plane carbon commutator comprising:

a plurality of metal segments fixed to a commutator body made of resin, said metal segments having engaging holes and cut-rising pieces rising from peripheral edges of said engaging holes;

and

~~engaging projections provided on~~ a carbon ~~which was~~ previously burnt at a high temperature, said carbon having engaging projections being engaged with said engaging holes provided in said metal segments and integrally formed as one unit, said each engaging projection having a tip end and a peripheral side,

wherein tip ends of said cut-rising pieces ~~functioning~~ are operative to allow insertion of said engaging projections into said engaging holes, but operative to prevent said engaging projections from being pulled out from said engaging holes, ~~are projected from peripheral edges of said engaging holes,~~ and

the tip ends of said cut-rising pieces are dimensioned to have a smaller diameter than the diameter of each engaging projection whereby said cut-rising pieces are brought into contact under pressure with said peripheral ~~faces~~ sides of said engaging projections, so that ~~the~~ said cut-rising pieces form coarse faces on the peripheral faces of the tip end side of ~~the~~ said engaging projections as ~~the~~ said engaging projections pass through ~~the~~ said engaging holes.

REMARKS

Claims 1 and 5 are amended to clarify the invention. Claims 1, 3 and 5 remain under consideration in this application, Claim 4 being drawn to a non-elected invention. No claim was previously indicated as allowable.

Claim Rejections – 35 U.S.C. §102/103

The Examiner rejected Claims 1, 3 and 5 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP10004653 to Sugiyama ("*Sugiyama*"). The Applicant respectfully traverses this rejection for the reasons discussed below.

Claim 1

The plane carbon commutator as defined by amended Claim 1 requires that the tip ends of the cut-rising pieces extend inwardly from the peripheral edges of the holes to engage the peripheral sides of the engaging projections with pressure sufficient to form coarse faces on the peripheral sides as the projections are inserted into the holes, and to prevent said engaging projections from being pulled out from said engaging holes, so that it is unnecessary to form coarse faces on the peripheral sides of said engaging projections before inserting the projections into said engaging holes.

In contrast, *Sugiyama* discloses that cut-rising pieces 21 are formed by the tool 19 after the engaging protrusions 17P are inserted into the engaging holes 15H, as shown in Figs. 7 (A)-(C) and described in paragraph [0022], and therefore, it is impossible for the cut-rising pieces 21 of *Sugiyama* to form coarse faces on the peripheral sides as the projections are inserted into the holes. Rather, the cut-rising pieces 21 of *Sugiyama* are formed to bite into the peripheral sides of the engaging projections 17P that already abut the cut-rising pieces 21 to fasten the engaging projections 17P. Moreover, the tip ends of the cut-rising pieces of Claim 1 are made to have certain elasticity so that coarse faces can be formed on the

peripheral sides of the engaging projections without destroying the engaging projections during insertion, which regular metal would do. Because *Sugiyama* completely fails to disclose that the tip ends of the cut-rising pieces extend inwardly from the peripheral edges of the holes to engage the peripheral sides of the engaging projections with pressure sufficient to form coarse faces on the peripheral sides as the projections are inserted into the holes, and to prevent said engaging projections from being pulled out from said engaging holes, so that it is unnecessary to form coarse faces on the peripheral sides of said engaging projections before inserting the projections into said engaging holes, as required by Claim 1, *Sugiyama* does not anticipate either the structural or functional combinations of Claim 1.

Because *Sugiyama* fails to show or suggest that the tip ends of the cut-rising pieces extend inwardly from the peripheral edges of the holes to engage the peripheral sides of the engaging projections with pressure sufficient to form coarse faces on the peripheral sides as the projections are inserted into the holes, and to prevent said engaging projections from being pulled out from said engaging holes, so that it is unnecessary to form coarse faces on the peripheral sides of said engaging projections before inserting the projections into said engaging holes, the structural and functional combinations recited in amended Claim 1 would not have been obvious to one of ordinary skill from *Sugiyama* at the time the Applicant made the claimed invention.

Claim 5

The plane carbon commutator as defined by amended Claim 5 requires that the tip ends of the cut-rising pieces are dimensioned to have a smaller diameter than the diameter of each engaging projection whereby said cut-rising pieces are brought into contact under pressure with the peripheral sides of said engaging projections, so that the cut-rising pieces form coarse faces on the peripheral faces of the tip end side of the engaging projections as the engaging projections pass through the engaging holes.

As discussed above in relation to Claim 1, the cut-rising pieces 21 of *Sugiyama* are formed only to bite into the part of the peripheral sides of the engaging projections 17P which abut the cut-rising pieces 21 to fasten the engaging projections 17P. The cut-rising pieces 21 of *Sugiyama* do not form coarse faces on the peripheral faces of the tip end side of the engaging projections as the engaging projections pass through the engaging holes. Therefore, *Sugiyama* fails to disclose that the tip ends of the cut-rising pieces are dimensioned to have a smaller diameter than the diameter of each engaging projection whereby the cut-rising pieces are brought into contact under pressure with the peripheral sides of said engaging projections, so that the cut-rising pieces form coarse faces on the peripheral faces of the tip end side of the engaging projections as the engaging projections pass through the engaging holes. Accordingly, *Sugiyama* does not anticipate either the structural or functional combinations of Claim 5.

Because *Sugiyama* fails to show or suggest that the tip ends of the cut-rising pieces are dimensioned to have a smaller diameter than the diameter of each engaging projection whereby the cut-rising pieces are brought into contact under pressure with the peripheral sides of said engaging projections, so that the cut-rising pieces form coarse faces on the peripheral faces of the tip end side of the engaging projections as the engaging projections pass through the engaging holes, the structural and functional combinations recited in amended Claim 5 also would not have been obvious to one of ordinary skill from *Sugiyama* at the time the Applicant made the claimed invention.

Claim 3 depends from independent Claim 1. The remarks made above in support of the independent claim are equally applicable to distinguish the dependent claim from the cited reference.

The foregoing is submitted as a complete response to the Office Action identified above. This application should be in condition for allowance, and the Applicant solicits a notice to that affect.

Respectfully submitted,

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